

A satellite is shown in orbit above the Earth's surface. The satellite is a dark, rectangular object with a small antenna or probe extending from its bottom. It is positioned in the upper center of the frame, casting a bright, yellowish glow on the Earth's surface below. The Earth's surface is a deep blue color with visible cloud patterns. The horizon of the Earth is visible in the upper left, and the blackness of space is in the upper right.

Northrop Grumman

“Unleashing the power of technology to create value and knowledge for our clients with mission critical needs”

1. The first part of the document is a list of names and titles, including "The Hon. Mr. Justice" and "The Hon. Mr. Justice".



ROBOTICS

PROGRAM: All-Terrain Hex-Legged Extra-Terrestrial Explorer, ATHLETE
Aka Rough & Steep Terrain Lunar Surface Mobility

PURPOSE: To develop a lunar utility vehicle capable of high mobility on Rough and Steep Lunar Terrain. Use of ATHLETE vehicles will result in savings of thousands of hours of lunar construction time and hundreds of tons of mass due to decreased numbers of astronauts needed to complete tasks.

INVOLVEMENT: Developing electronics and on-board software for a large wheel-on-leg robot capable of advanced mobility and manipulation.

GENERAL: Project started in February 2005. Successfully demonstrated basic driving, simple manipulation, and vision-guided docking of multiple robots in December 2005. Currently enhancing the system and software in order to demonstrate advanced mobility on natural terrain for 2006.

A satellite is shown in space, with the Earth's horizon visible in the background. The satellite is a small, dark object with a rectangular shape, positioned in the upper center of the frame. The Earth's surface is a mix of blue and white, representing the ocean and clouds. The horizon line is a smooth curve across the middle of the image.

LASER COMMUNICATION

PROGRAM: Mars Laser Communication Demonstration (MLCD) Project

PURPOSE: To demonstrate the first deep-space optical communications link which consist of an orbiter around Mars that carries a laser transmitter that would be received by a ground based telescope on Earth (Mt Palomar).

INVOLVEMENT: Supported the system engineering and receiver design teams. The teams developed and analyzed a detection scheme for the receiver operating in the presence of thermal and excess noise; development and analysis of acquisition and tracking algorithms for timing synchronization of the transmit and received signal slot clocks; designed developed and implemented a proto-type receiver for the MLCD end-to-end development system which the JPL team successfully demonstrated to NASA

GENERAL: This mission was canceled, but the technology development is continuing under a NASA technology development program.

A satellite is shown in orbit above the Earth's surface. The satellite is a dark, rectangular object with a small antenna or probe extending from its bottom. It is positioned in the upper center of the frame, with a bright, circular glow around it, suggesting it is emitting a signal or is being tracked. The Earth's surface is visible below, showing a blue and white pattern of clouds and landmasses. The horizon line is visible in the upper part of the image, separating the Earth from the blackness of space.

Jet Propulsion Laboratory and partners

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